

I Claim:

1. A spark ignition controlling method for an internal combustion engine, comprising:

- 5 counting a number of cylinders receiving at least one fuel injection from a start of the internal combustion engine; determining a cylinder spark angle based on said counted number of cylinders; determining an operator request; 10 adjusting said cylinder spark angle based on said operator request; and delivering a signal to an ignition system of the internal combustion engine based on said adjusted spark amount.
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15 2. The method of Claim 1 wherein said spark adjustment increases spark amount with an increase in said operator request.

20 3. The method of Claim 1 wherein said spark adjustment decreases spark amount with a decrease in said operator request.

25 4. The method of Claim 1 wherein said operator request is an engine load request.

5. The method of Claim 1 wherein said operator request is based on a throttle position.

30 6. The method of Claim 1 wherein said operator request is based on electronically controlled valve demand.

7. A spark ignition controlling method for an internal combustion engine, comprising:

counting a number of cylinders receiving at least one fuel injection from a start of the internal combustion engine;

5 determining a first amount of cylinder spark angle based on said counted number of cylinders;

determining a catalyst temperature;

adjusting said first amount of cylinder spark angle based on said catalyst temperature; and

10 delivering said adjusted first spark angle amount to said internal combustion engine.

8. The method of Claim 7 wherein said spark amount adjustment increases spark angle amount as said catalyst  
15 temperature increases.

9. The method of Claim 8 wherein said spark amount adjustment decreases spark angle amount as said catalyst  
20 temperature decreases.

10. The method of Claim 7 wherein said first spark amount is further adjusted based on a time since said engine last operated.

25 11. A spark ignition controlling method for an internal combustion engine, comprising:

determining an engine air amount;

injecting fuel based on said engine air amount;

counting a number of cylinders receiving at least one  
30 fuel injection at a start of the internal combustion engine;  
and

determining an amount of cylinder spark angle based on said counted number of cylinders.

12. The method of Claim 11 wherein said cylinder spark angle is further adjusted based on ambient air temperature and engine temperature.

5 13. The method of Claim 11 wherein said cylinder spark angle is further adjusted based on a catalyst temperature.

14. The method of Claim 11 wherein said cylinder spark angle is further adjusted based on barometric pressure.

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15. The method of Claim 11 wherein said cylinder spark angle is further adjusted based on a time since said internal combustion engine last operated.

15 16. The method of Claim 11 wherein said cylinder spark angle is further adjusted based on operator input.

17. The method of Claim 11 wherein said cylinder spark angle is further adjusted based on operator input and a  
20 catalyst temperature.

18. The method of Claim 17 wherein said engine air amount is a predicted engine air amount.

25 19. The method of Claim 18 wherein said cylinder spark angle is further adjusted based on barometric pressure.

20. The method of Claim 19 wherein said cylinder spark angle is further adjusted based on a time since said internal  
30 combustion engine last operated.